

Are you serious? From fist bumping to hand hygiene: considering culture, context and complexity in infection prevention intervention research

Reilly, Jacqui; Currie, Kay; Madeo, Maurice

Published in:
Journal of Infection Prevention

DOI:
[10.1177/1757177415605659](https://doi.org/10.1177/1757177415605659)

Publication date:
2016

Document Version
Author accepted manuscript

[Link to publication in ResearchOnline](#)

Citation for published version (Harvard):
Reilly, J, Currie, K & Madeo, M 2016, 'Are you serious? From fist bumping to hand hygiene: considering culture, context and complexity in infection prevention intervention research', *Journal of Infection Prevention*, vol. 17, no. 1, pp. 29-33. <https://doi.org/10.1177/1757177415605659>

General rights

Copyright and moral rights for the publications made accessible in the public portal are retained by the authors and/or other copyright owners and it is a condition of accessing publications that users recognise and abide by the legal requirements associated with these rights.

Take down policy

If you believe that this document breaches copyright please view our takedown policy at <https://edshare.gcu.ac.uk/id/eprint/5179> for details of how to contact us.

Are you serious? From fist bumping to hand hygiene: Considering culture, context and complexity in infection prevention intervention research

Prof J Reilly ^{1,2}, Dr K Currie ¹, Mr M Madeo ³

¹Glasgow Caledonian University

² Health Protection Scotland

³Doncaster & Bassetlaw NHS Hospitals

Corresponding author: Professor Jacqui Reilly

Health Protection Scotland

Glasgow G26QE

Tel :01413001162

Mobile: 07818014220

Email: jacquelinereilly@nhs.net

Word count: 3060

No conflicts of interest declared by authors.

Abstract

Infection prevention is an under-resourced research and development topic, with limited evidence for practice in the most basic of measures. A survey of IPS R&D members indicated that what might appear to be simple interactions and interventions in healthcare, such as hand shaking and hand hygiene, should be considered complex interventions taking account of behaviour at the individual and social level as well as contextual factors. Future studies need to be designed utilising comprehensive approaches, for example, the Medical Research Council complex interventions framework, tailored to the country and more local cultural context, if we are to be serious about evidence for infection prevention and control practice.

Introduction

Infection prevention and control (IPC) has been the Cinderella topic for research funding for many years. A systematic review (Head et al 2014) of the last 10 years of funding in this area, revealed that a small percentage of available research funding is spent on this topic, in comparison to other health topics. Around half of the IPC funded research was operational research, 10% product development and the remaining majority pre clinical research. Less than 2% of the research was phase 1, 2 or 3 trials. It

is therefore of little wonder that there is a less than optimal evidence base for practice in IPC.

A recent systematic review of the evidence for effective IPC (Zingg et al 2014) indicated that very little good quality evidence was available to support infection prevention and control structures and process at the organisational and managerial level (Zingg et al 2014). Even when reviews have focussed on very specific topics of public health importance, such as Meticillin-resistant *Staphylococcus aureus* (MRSA), the findings are similar (Fätkenheuer et al 2014). After reviewing studies on preventing the spread of MRSA in hospitals over the past decade, Fätkenheuer et al concluded that, although various approaches to tackle MRSA have been examined, most of the research has looked at bundles of control measures. The result of this is that it remains unclear which individual components work best, or whether some of them have any impact at all on infection transmission.

These recent reviews point to the fact that many researchers conclude that a multimodal approach is required for IPC (WHO 2009), because the design of the study has not been able to account for bias and confounding. This is because much of the research is observational research in practice (Head et al 2014) and because IPC is complex. The complexity is influenced by multiple factors; intrinsically at the patient

levels, and extrinsically at the practitioner and organisation level, having the potential for impact on the results (Krein et al 2006).

The use of an appropriate theoretical framework, such as critical realist theory (Clark et al. 2008), to guide more sophisticated research designs may enable investigation of the complex interactions between individual and contextual factors which can influence behaviours and healthcare outcomes. Evaluation approaches which focus on unpicking this complexity may address some of the limitations of more simplistic observational approaches. One such theory-driven approach is realistic evaluation (Pawson & Tilley, 1997) although other qualitative or mixed methods designs may also be worthwhile.

Best practice in research is to ensure the study findings translate to practice application (Boyce et al 2012). This means: developing interventions systematically, using the best available evidence, adopting an appropriate theoretical framework, then testing them using a careful stepwise approach (Medical Research Council 2006). Assessing effectiveness and then fine tuning to the cultural context is the next logical step, however very little IPC research to date has been developed in this way (Head et al 2014). This opinion piece will explore best practice in research using sd sn example

the recently published work on 'fist bumping' (Melia and Whitworth 2014) in the American Journal of Infection Control (AJIC).

The fist bump story

It was 9.30am on the 14th July when a British Broadcasting Corporation (BBC) reporter phoned Health Protection Scotland (HPS) for a comment on whether doctors and nurses should fist bump, instead of shaking hands, when greeting patients. The fist bump has penetrated popular culture, reflected to some extent by the number of hits for the term on a Google search and illustrated through the global lens of the media in the United States of America (USA) presidential inauguration ceremony (appendix 1). Triggered by the AJIC article and its associated media, the fist bump has unsurprisingly captured the attention of the United Kingdom (UK) media. This media interest was in response to scientists, at Aberystwyth University in Wales (Melia and Whitworth 2014), who had shown that a handshake transfers more bacteria than other forms of hand greeting. The researchers were calling for the widespread adoption of the fist bump instead of hand shaking.

In their study, the researchers took a pair of sterile rubber gloves and dipped one into a bacterial-broth so the outside was completely coated in *E. coli*. They then performed

a range of hand greetings including handshakes, fist bumps and high-fives. The findings indicated that a handshake transferred 10 times as many bacteria as a fist bump. The authors concluded the smaller area of contact and shorter duration in the bump reduced the spread of bacteria. However the study was somewhat limited by: the nature of the design, small sample size, and being based in a laboratory rather than clinical practice. Further, using gloves and dipping them in *E.coli* is nowhere close to the bacteria found on hands in clinical practice (Chow et al 2012). The resulting issues of poor design, bias and lack of generalizability; means that the findings are so limited in terms of the evidence, that they are unable to be translated into practice. Despite this, the research had wide media coverage internationally (Gallagher 2014, Painter 2014). This may be a salutary lesson for practitioners in relation to the influence of media coverage on clinical practice, which may not be supported by good evidence (Holmes et al 2009).

It is not the first time the argument about handshaking has been raised in the published literature. There have been calls in the Journal of the American Medical Association to ban handshakes from hospitals, based on opinion and selective reviewing of the literature, to support the case (Sklansky et al 2014). In both this paper and this most recent study described from Wales (Melia and Whitford 2014), the

evidence to support the interaction is somewhat lacking; however , poses a question which might be worthy of further exploration.

At a first look the simple hand shake or fist bump is a single interaction at the point of care, however it is part of the social nature of the interaction between clinicians and patients, has implications for transmission of infection in terms of practices before and after the hand shake, time for skin contact, and hand hygiene 'moment' practice (WHO 2009) and may further be defined by cultural norms. These norms are complex in themselves and require consideration of beliefs, values and social understanding (Jackson et al 2013). Thus we could consider effective hand hygiene around the time of hand shaking as a complex interaction with social , psychological, religious, and clinical components and therein, we know little about the comparable effectiveness or social acceptability of hand shaking Vs fist bumping in a clinical context (Sklansky et al 2014).

The IPS fist bump survey

In order to determine whether the idea of the potential complexity of the interaction between individual, social and IPC aspects of the hand shake versus fist bump was worth pursuing, we decided to canvass the views of IPC practitioners on this topic. The IPS R&D group surveyed its members via the IPS website and asked for their views on

‘whether fist bumping should be considered instead of hand shaking in clinical practice?’ There were 249 respondents, the majority (90%) of which were IPC nurses although there was also representation from microbiologists, researchers and commercial members too. The majority (85%) of responses were against the use of fist bumps, with 7% for them and 8% unsure.

One hundred and twenty respondents provided additional comments to expand on their yes/no answer. All comments were transferred as a word document into NVivo 10[®] software to manage qualitative data analysis. Elo & Knygas’s (2008) principles of inductive content analysis were applied to describe and quantify categories emerging from the data. Questionnaire comments were read over carefully and representative coding labels were assigned to sections of data (open coding); resultant codes were grouped together for similarity of meaning and condensed to form the final nine categories (Table 1). To enhance rigour in the analysis, a second researcher confirmed code assignment and reviewed the audit trail generated via the NVivo¹⁰ software.

Table 1: Rank ordered content analysis of open text comments on fist bump survey (n=129)

Category	Frequency count	Illustrative quotes
Distracts from good hand hygiene	48	<p>'A fist bump or a hand shake it is still the same, surely we don't want anything to take away the need for hand hygiene.'</p> <p>'Opens the door to comments like "I don't need to clean my hands I only had a little bit of contact".'</p> <p>'As long as hand hygiene is practiced at the right time in the right way handshaking is fine.'</p> <p>'This is a distraction - continue to focus on the 5 moments.'</p>
Cultural congruence	43	<p>'Culturally confusing for many generations and backgrounds.'</p> <p>'We are not "rappers". And just because the President of the USA does it does not make it a "good thing".'</p> <p>'Greeting people is part of a cultural norm. A fist bump is attributed to Americans and young people. Highly inappropriate as a professional greeting.'</p> <p>'The handshake is integral to a good patient-doctor relationship and is internationally known as a gesture of friendship and trust. Replacing it with a fist bump is a step too far in Infection Prevention political correctness.'</p>
Ridiculous!	23	<p>'Are you serious?'</p> <p>'I've checked - it's 19 August and not 1 April ...'</p>

		<p>'When this fist bump fad loses its entertainment value what will be next.....chest bumps?'</p>
Infection transmission	17	<p>'Doesn't really matter if greeting is handshake or fist bump, bugs have no preference either ways.'</p> <p>'It propagates an idea that some form of hand-to-hand contact does not result in transfer of organisms... are we now saying that hand hygiene after contact is only important for certain kinds of contact?'</p> <p>'I would expect hand decontamination following fist bumps as I would hand shaking.'</p>
Unprofessional	17	<p>'Fist bumping is unprofessional and may offend certain generations and cultures.'</p> <p>'A fist bump is not part of our social culture and given that we want to demonstrate professionalism and respect for patients I feel this is inappropriate.'</p> <p>'It's just wrong and doesn't project the right image for healthcare staff !!!'</p>
Alternative forms of greeting	14	<p>'Still involves hand contact. Let's explore non-contact greetings if we're going down this road.'</p> <p>'Either a handshake or advocate no handshake - this suggestion I find rather ridiculous. Maybe promote eye contact, a genuine smile and greeting.'</p> <p>'Healthcare professionals could greet their patients with a more gentle expression through folded hands as in prayer.'</p>
An aggressive act	11	<p>'This may be misconstrued as a fist coming towards them which might be threatening.'</p> <p>'It could be misinterpreted in my field of practice, which is In-Patient Mental Health. An open hand</p>

		<p>offered as a greeting is far less threatening than a fist.'</p> <p>'I believe that for the majority of patients this would be seen as confrontational and it is critical that we build a good relationship from the work go with patient to assist compliance.'</p>
A personal touch	9	<p>'How impersonal!'</p> <p>'People receive more than skin shed in an encounter where a handshake happens, emotional support, evidence of courtesy respect and a sense that one is not untouchable...surely.'</p> <p>'I believe we should have healthcare professionals who are well educated in hand hygiene and who can continue to deliver a personal touch.'</p>
Good idea	2	<p>'Yes, keen to endorse any measure that will raise awareness of hand hygiene and direct contact!'</p> <p>'Worth considering for patients under the age of 25.'</p>

Only two respondents indicated that introducing fist bumps as an alternative to handshaking might be worth considering, with a significant number (n=23) asking 'Are you serious?' in response to what was felt to be a ridiculous suggestion. The majority view (n=48) expressed concern that this 'trendy' initiative served only to distract from the central message of correct hand-hygiene at the correct time, emphasising the need for all staff to understand and comply with the 5 Moments for hand hygiene (WHO 2009). This was closely linked to ideas of the need to block transmission of infection by

decontaminating hands before and after clinical contact (n=17), irrespective of the form of greeting; as one respondent noted, “Doesn't really matter if greeting is handshake or fist bump, bugs have no preference either way.”

In addition to clinical infection related concerns, many respondents highlighted the need for greetings to be ‘culturally congruent’ (n=43), acknowledging the importance of the handshake as a traditional social greeting, particularly for older patients. Fist bumping was felt to be part of ‘youth street culture’, ‘too American’ and also ‘unprofessional’ (n=17), with potential to be misinterpreted as ‘an aggressive act’ (n=11); as one respondent commented “An open hand offered as a greeting is far less threatening than a fist.” The caring, interpersonal component of a hand shake was also recognised, with the need to share more emotional and holistic components of an interaction expressed in the category ‘a personal touch’ (n=9). Some respondents also suggested ‘alternative forms of greeting’ (n=14), ranging from a simple smile and verbal ‘hello’, to a wave ,elbow bump, or ‘hands folded as in prayer’.

Overwhelmingly, the participants in this small cross-sectional survey of Infection Prevention & Control interested practitioners showed no support for fist bumping as an alternative to the traditional handshake; this is summed up in the comment of one respondent who stated frankly “Stupid idea. Wash your hands.” More importantly the

results demonstrate how complex and culturally constructed, such a seemingly simple, yet common, interaction can be.

Discussion

Complex interventions are usually described as interventions that contain several interacting components (Craig et al 2013). There are, however, several dimensions of complexity: the range of potential outcomes, variability in the patient population, as well as the aforementioned number of elements in the intervention package or 'bundle' itself. Evaluating a complex intervention such as IPC, given the multimodal approach taken in healthcare, requires a formal framework to be adopted such as that proposed by the MRC evaluating complex interventions (Craig et al 2013). This enables researchers to consider the whole range of experimental and non-experimental approaches to enable appropriate methodological choices to address the question. It also ensures a focus on assessing effectiveness and evaluating the process of implementation in order to gain an understanding of why an intervention might work, and in what settings and context. This is important as the findings of a study in one hospital or country may not translate to another, given the nature of human interactions in a complex healthcare culture (Forman et al 2008).

Cultural context is important in understanding the nature of interventions. Hofstede's (2001) model of cultural dimensions proposes that national cultures vary along consistent dimensions which can be grouped and scored as specific constructs. Applied research studies on healthcare associated infection have reported that these cultural constructs are associated with IPC practice (Borg 2014). Successful IPC strategies are likely to be those that are compatible with the cultural background where they are implemented; in other words, to return to our exemplar, fist bumping might be acceptable culturally in the USA, but not elsewhere. On this note, in response to the Melia and Whitworth (2014) article, Peter Hoffman was quoted on the BBC website as saying: "The ultimate approach to avoiding germs would be if we went back to the Victorian age when on meeting someone you would bow or curtsy from a respectful distance - no germs there!" (Hoffman 2014).

Conclusion

IPC is an under resourced research and development topic, with limited evidence for practice in the most basic of IPC measures. The nature of the responses to this IPS survey demonstrates the need for what might appear to be simple interactions and interventions in healthcare, such as hand shaking and hand hygiene, to be considered complex, taking account of behaviour at the individual and social level as well as

contextual factors. Future IPC studies need to be designed utilising comprehensive approaches, for example, the MRC complex interventions framework, tailored to the country and more local cultural context, if we are to be serious about evidence for IPC practice.

Acknowledgements

IPS R&D committee is gratefully acknowledged for their support of the survey as are the participants in the fist bump survey

References

Borg M (2014) Lowbury Lecture. Cultural determinants of infection control behaviour: understanding drivers and implementing effective change *Journal Hospital Infection* 86(3):161-8.

Boyce T, Murray E, Holmes A (2009) What are the drivers of the UK media coverage of meticillin-resistant *Staphylococcus aureus*, the inter-relationships and relative influences? *Journal of Hospital Infection* 73:400-07.

Chow A, Arah OA, Chan SP et al (2012) Alcohol handrubbing and chlorhexidine handwashing protocols for routine hospital practice: A randomized clinical trial of

protocol efficacy and time effectiveness *American Journal of Infection Control* 40(9): 800-05.

Clark AM, Lissel S, Davis S. Complex Critical realism: Tenets and applications for nursing research. *Advances in Nursing Science* 2008; 31(4): E67-E79.

Craig P et al (2013) Developing and evaluating complex interventions: The new Medical Research Council guidance *International Journal of Nursing Studies* 50(5):587-592

Elo S and Kyngäs H (2008) The qualitative content analysis process. *Journal of Advanced Nursing* 62(1): 107-115.

Fätkenheuer G, Hirschel B, Harbarth S (2014). Screening and isolation to control meticillin-resistant *Staphylococcus aureus*: sense, nonsense, and evidence. *The Lancet* Published online August 21, 2014 [http://dx.doi.org/10.1016/S0140-6736\(14\)60660-7](http://dx.doi.org/10.1016/S0140-6736(14)60660-7)

Forman et al (2008) Qualitative research methods: key features and insight gained from use in infection prevention research *American Journal of Infection Control* 36(10):764-771.

Gallagher J (2014) Fist bumps cleaner than handshakes Available at: <http://www.bbc.co.uk/news/health-28481957> (accessed 26 January 2015).

Head MG et al (2014) Funding of HAI: a systematic analysis of UK research investments
Journal of Hospital Infection 87:84-91.

Hoffman P (2014) Fist bumps cleaner than handshakes Available at:
<http://www.bbc.co.uk/news/health-28481957> (accessed 26 January 2015).

Hofstede G (2001) Culture's consequences: comparing values, behaviours, institutions,
and organizations across nations. Sage Publications, Thousand Oaks, CA; USA.

Holmes B, Scarrow G and Schellenberg M (2012) Translating evidence into practice: the
role of the health research funder. *Implementation Science* 7(39):1-10.

Krein SL, Olmsted RN, Hofer TP *et al* (2006) Translating infection prevention evidence
into practice using quantitative and qualitative research *American Journal of Infection
Control* 34(8):

Medical Research Council (2006) Developing and evaluating a complex intervention;
new guidance. Available at <http://www.mrc.ac.uk/documents/pdf/complex-interventions-guidance/> Accessed 17.3.15

Miela S and Whitworth DE (2014) The fist bump: A more hygienic alternative to the
handshake. *American Journal of Infection Control* 42(8): 916-7.

Painter K (2014) Study: Fist bumps are less germmy than handshakes. Available at: <http://www.usatoday.com/story/news/nation/2014/07/28/fistbump-handshake-germ-study/13170587/> (accessed 26 January 2015)

Pawson R and Tilley N. (1997) Realistic Evaluation. Sage, London.

Sklansky M et al (2014) Banning the Handshake From the Health Care Setting *Journal of the American Medical Association* 311(24):2477-2478.

WHO (2009) WHO guidelines on hand hygiene in health care, WHO, Geneva.

Zingg W et al (2014) Hospital organisation, management, and structure for prevention of health-care-associated infection: a systematic review and expert consensus *Lancet Infectious Diseases* 15(2):212-224.